

Metallorganische Synthesechemie der Hauptgruppenelemente

(B)	Si	P	
	Ge		(Se)
In	Sn	Sb	Te

Themenschwerpunkte

Sub- und Hypervalenz

H-Brücken / Sekundäre WW

Hetero- & Makrocyclen, Cluster

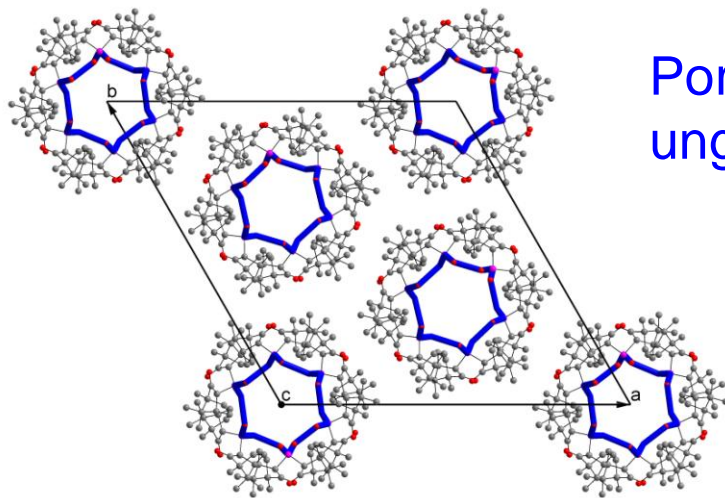
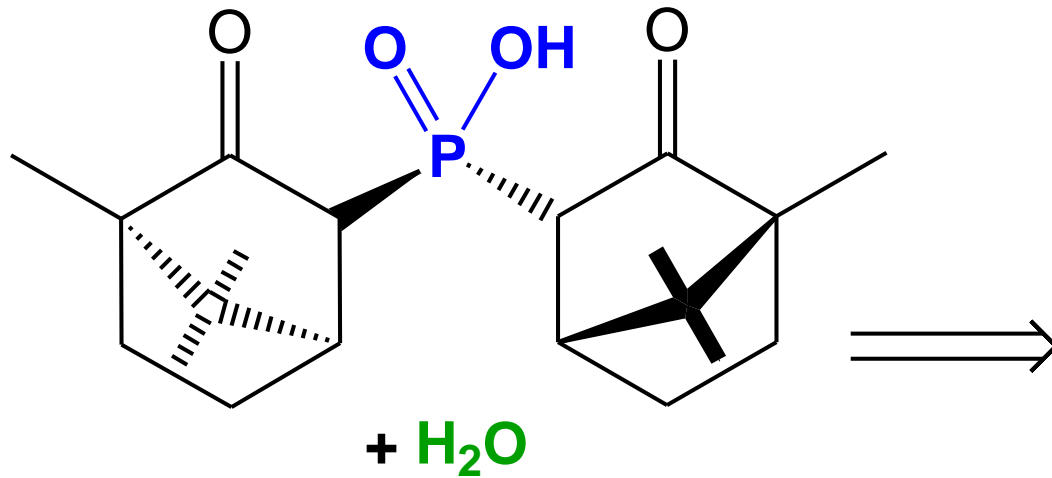
Chiralität

Si/C Austausch

Supra- und makromolekulare Chemie

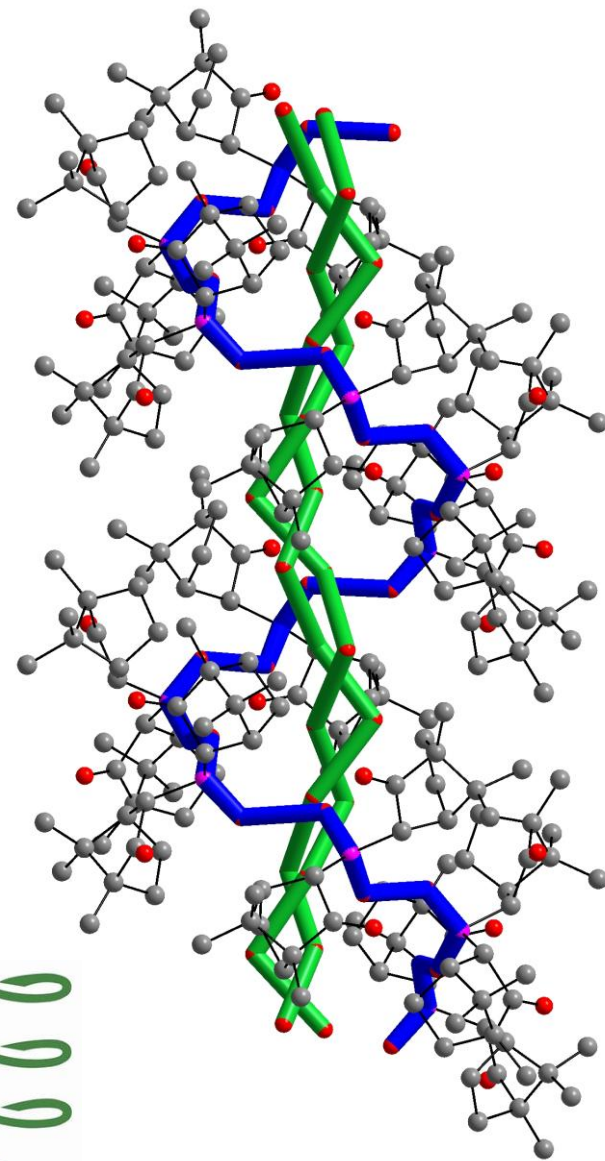
Ein supramolekularer chiraler Wirt mit Aquaporen

Bis(3-*endo*-camphoryl)phosphinsäure



Porendurchmesser
ungefähr 8,5 Å

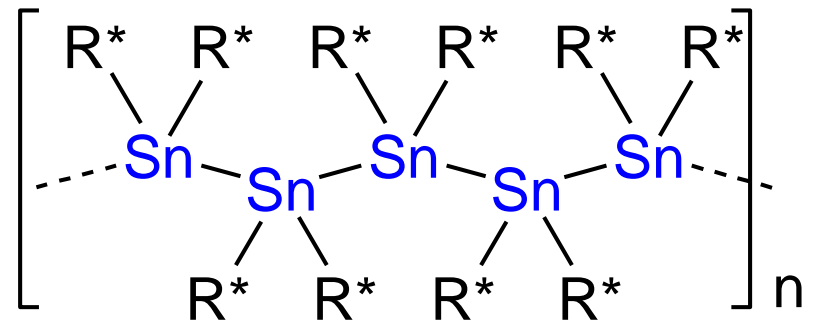
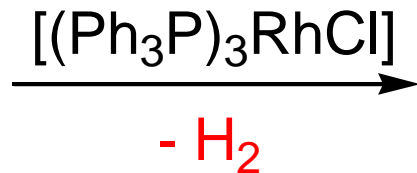
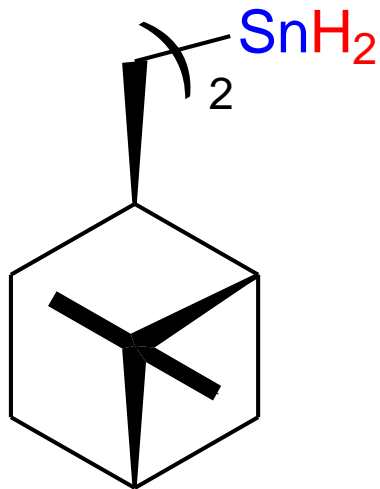
Linksgängige
Helix (M)



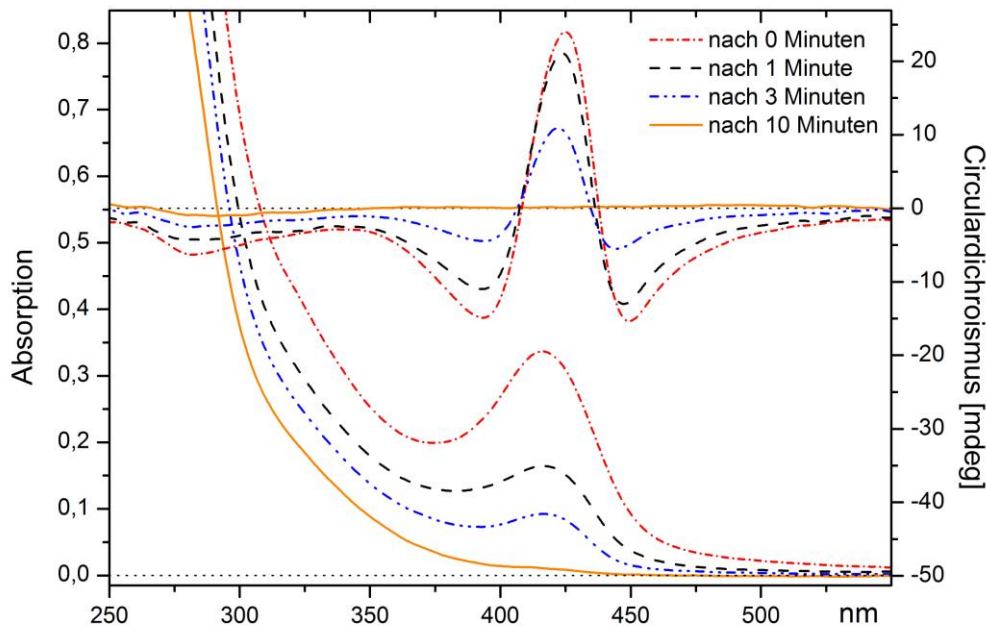
enantiomorphe Raumgruppe P6₅

Z. Anorg. Allg. Chem. **2008**, 634, 2785

Chirale Polystannane



R* = *cis*-myrtanyl



Delokalisierte σ -Elektronen

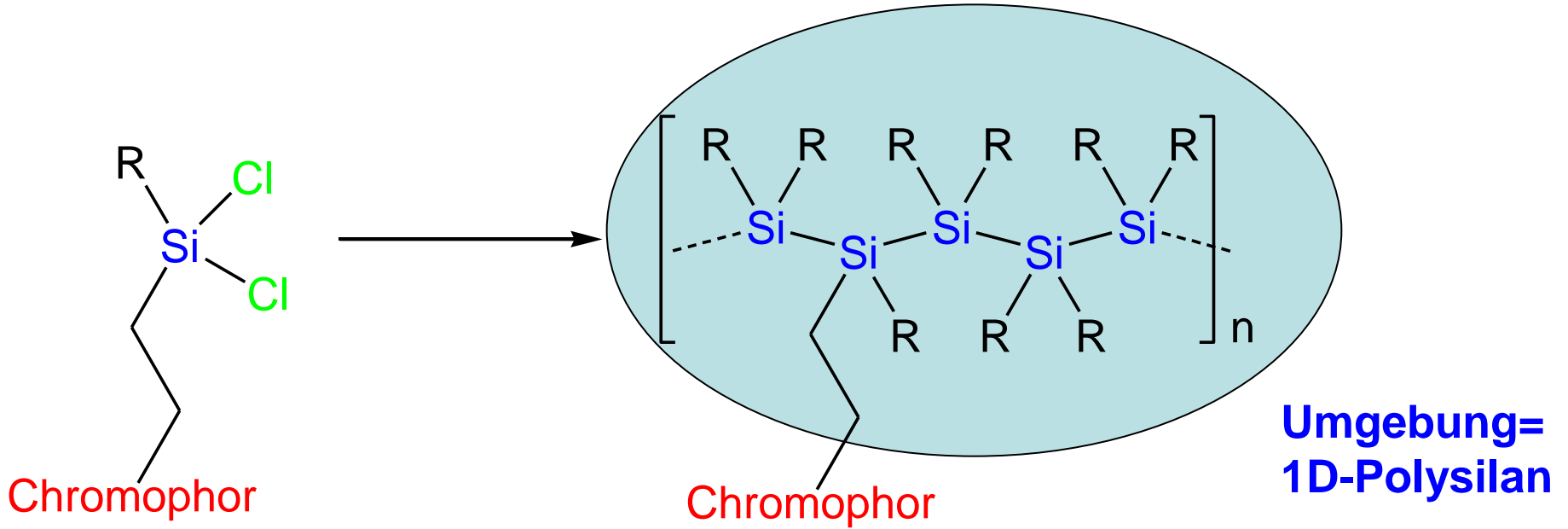
UV: λ_{max} bei zirka 415 nm

CD: positiver Cottoneffekt

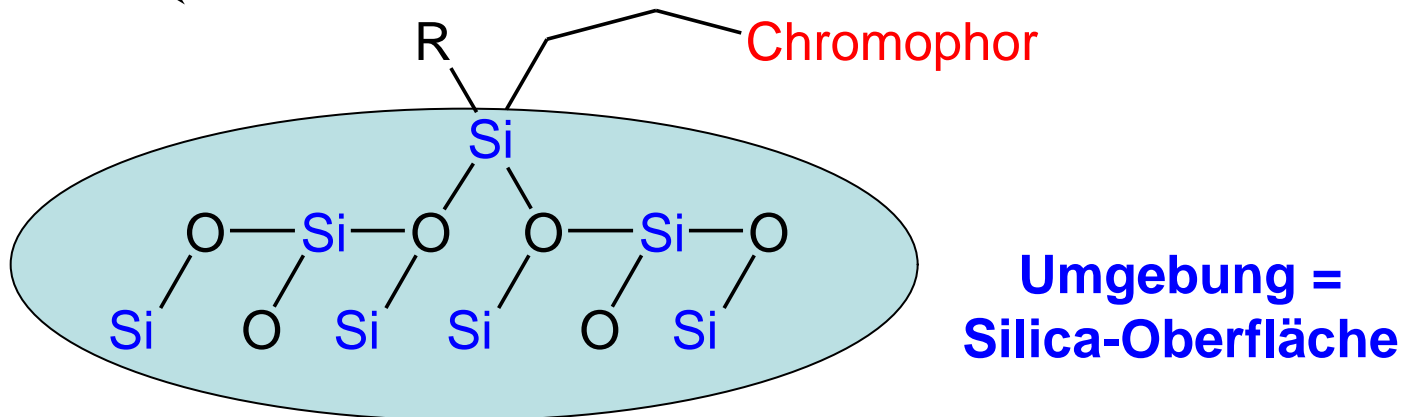
Rechtsgängige Helix (P)
(im Überschuss)



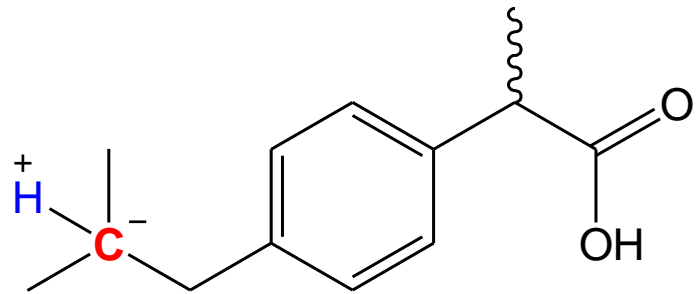
Wechselwirkung zwischen Chromophor und Umgebung



z.B. = Spiropyran, Zimtsäure, Tryptophan

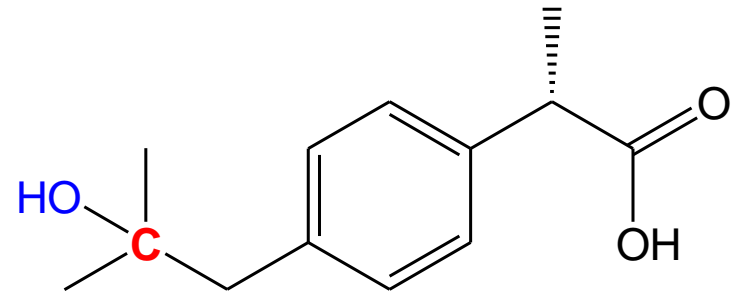


Si/C-Austausch am Beispiel Ibuprofen

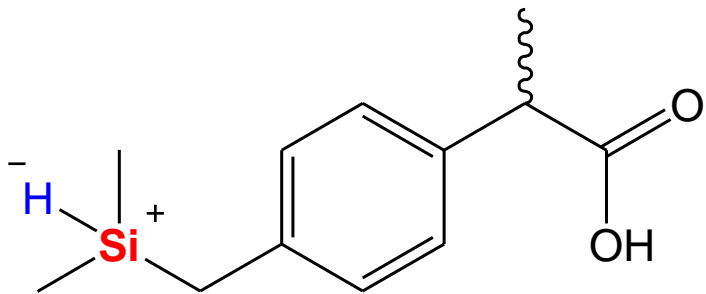


Ibuprofen

Oxidase

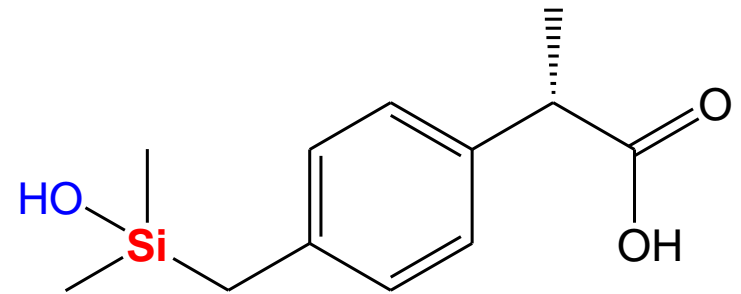


Hydroxy-Ibuprofen



Sila-Ibuprofen

Oxidase



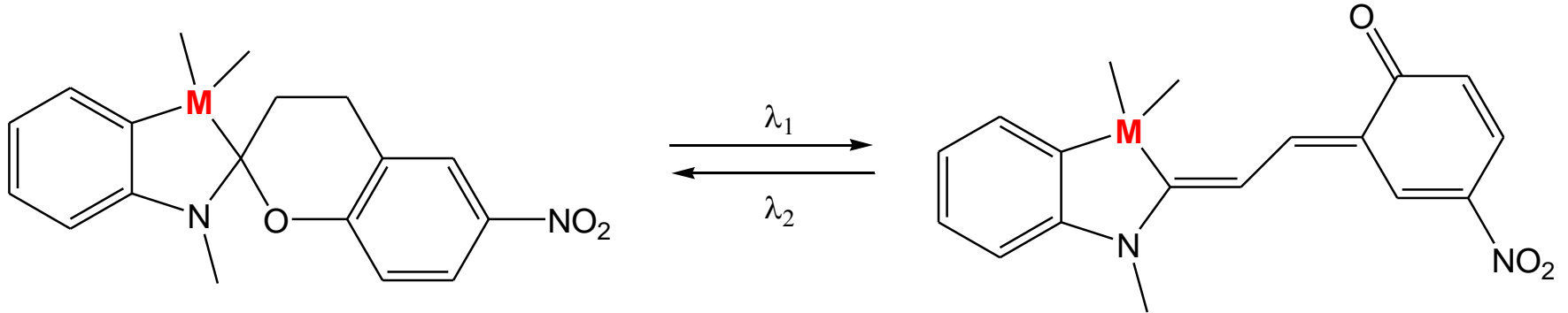
Sila-Hydroxy-Ibuprofen

Geringere van-der-Waals-WW.
= Höhere Löslichkeit
Intravenöse Anwendung ?

Bessere Wirkung
Stärkere H-Brücke mit Rezeptor

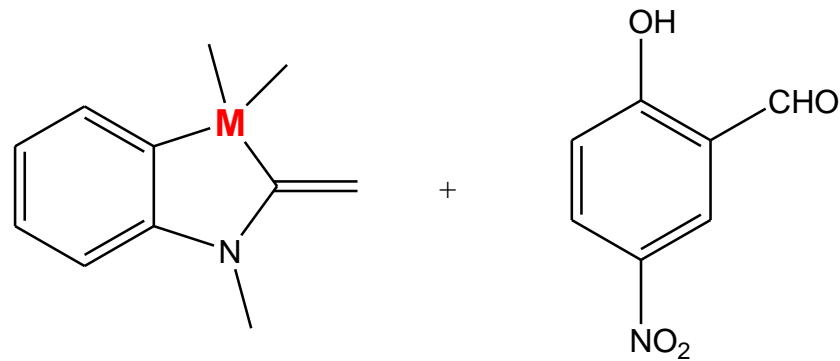
Si/C-Austausch in photochromen Molekülen

Einfluss auf elektronische Eigenschaften nehmen



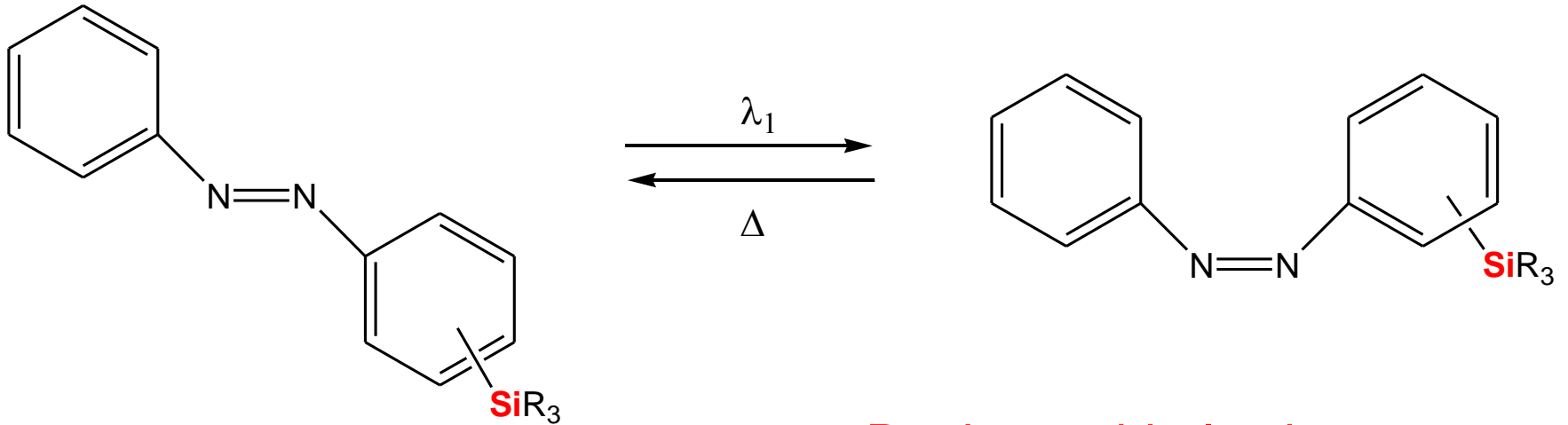
(Sila-)Spiropyran

Retrosynthese



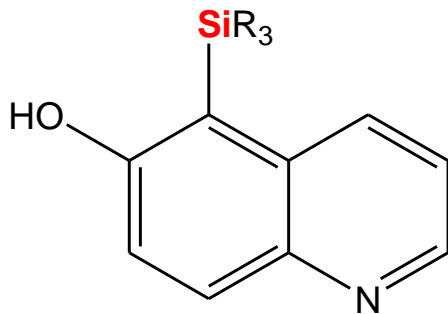
Substitution von photochromen Molekülen

Beeinflussung von Anregungsenergien

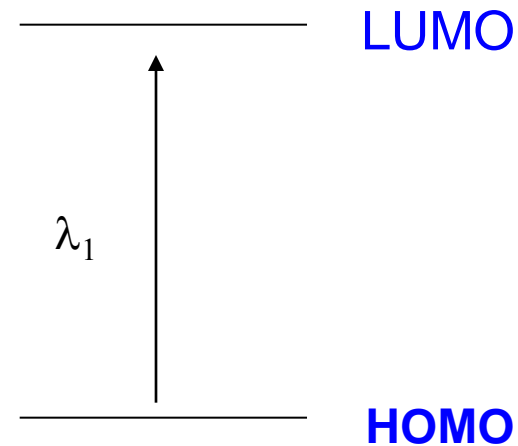


Azobenzole

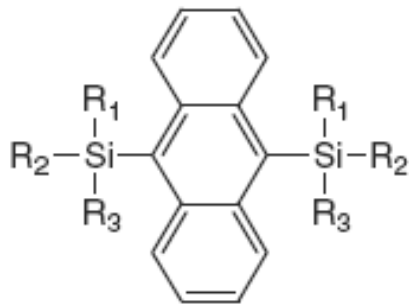
R = kann chiral sein



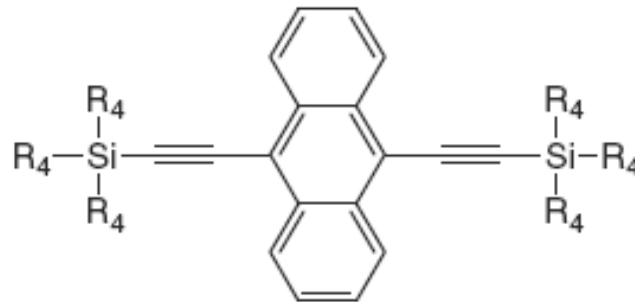
Hydroxoquinoline



Blaue Elektrolumineszenz



Me3: $R_1, R_2, R_3 = \text{CH}_3$
Me2Ph: $R_1, R_2 = \text{CH}_3, R_3 = \text{Ph}$
MePh2: $R_1 = \text{CH}_3, R_2, R_3 = \text{Ph}$
Ph3: $R_1, R_2, R_3 = \text{Ph}$



Me3E: $R_4 = \text{CH}_3$
Ph3E: $R_4 = \text{Ph}$

Silyl-Anthracene

Einbau chiraler Reste
sollte leicht möglich sein

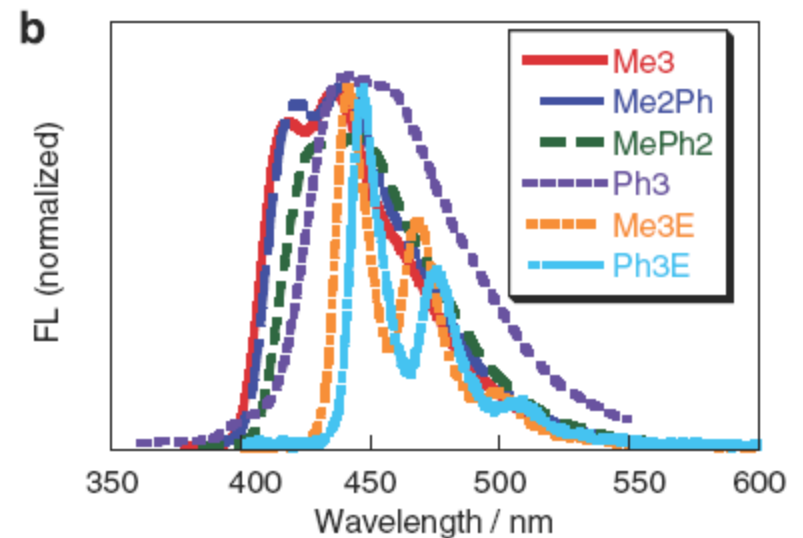
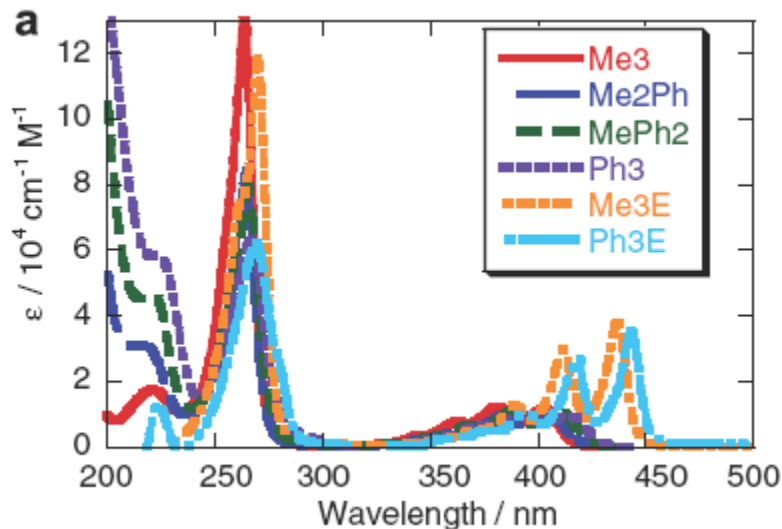


Fig. 1. Absorption (a) and fluorescence (b) spectra of 9,10-bissilylanthracenes in cyclohexane.